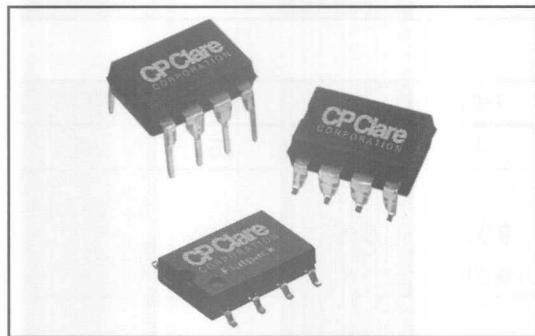


LOC110/LOC111/LOC112

Linear Optocouplers



DESCRIPTION

CP Clare's LOC110/LOC111/LOC112 Linear Optocouplers feature an infra-red LED optically coupled with two phototransistors. One feedback phototransistor is used to generate a control signal that provides a servomechanism to the LED drive current thus compensating for the LED's nonlinear time and temperature characteristics. The other (output) phototransistor provides an output signal that is linear with respect to the servo LED current.

FEATURES

- 8 pin Flatpack or DIP package (PCMCIa Compatible)
- Couples analog and digital signals
- Wide bandwidth (>200kHz)
- High gain stability
- Low input/output capacitance
- Low power consumption
- 5300 VAC peak input/output isolation available
- 0.01% servo linearity
- THD 87dB typical
- UL recognized file #: E76270
- CSA file #: LR43639-10
- BSI certificate #: 7691
7693
7694
7669

APPLICATIONS

- Modem transformer replacement with no insertion loss
- Digital telephone isolation
- Power supply feedback voltage/current
- Medical sensor isolation
- Audio signal interfacing
- Isolation of process control transducers

RATINGS (@ 25°C)

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150 ¹	mW
Input Control Current	-	-	100	mA
Peak (10ms)	-	-	1	A
Total Package Dissipation	-	-	500 ²	mW
Isolation Voltage				
Input to Output	2500	-	-	V _{RMS}
"E" Suffix (optional)	3750	-	-	V _{RMS}
Operational Temperature	-40		+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature (10 Seconds Max)	-	-	+260	°C

¹ Derate Linearly 1.33 mW/°C

² Derate Linearly 1.67 mW/°C

For additional information ask for our LOC Series Application Note No. 1003.
For detailed information on all CP Clare Products ask for our Data Book.

Input Characteristics @ 25°C

PARAMETERS	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
LED Voltage Drop	$I_F = 2-10\text{mA}$	V_F	0.9	1.2	1.4	V
Input/Output Capacitance		$C_{I/O}$	-	3	-	pF
Reverse LED Current	$V_R = 5\text{V}$	I_R	-	-	10	μA
Reverse LED Voltage		V_R	-	-	5	V
Forward LED Current		I_F	-	-	100	mA

Coupler/Detector Characteristics @ 25°C

PARAMETERS	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Dark Current	$I_F = 0\text{mA}, V_{CC} = 15\text{V}$	I_D	-	1	25	nA
K1, Servo Gain (I_1/I_F)						
LOC110, LOC112	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K1	0.004	0.007	0.030	-
LOC111	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K1	0.008	-	0.030	-
K2, Forward Gain (I_2/I_F)						
LOC110, LOC112	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K2	0.004	0.007	0.030	-
LOC111	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K2	0.006	-	0.030	-
K3, Transfer Gain (K_2/K_1) ¹	$I_F = 2-10\text{mA}, V_{CC} = 15\text{V}$	K3	0.55	-	1.43	-
ΔK_3 , Transfer Gain Linearity ¹ (non-servoed)	$I_F = 2-10\text{mA}$	ΔK_3	-	-	1.0	%
K3 Temperature Coefficient	$I_F = 2-10\text{mA}, V_{det} = -5\text{V}$	$\Delta K_3/\Delta T$	-	0.005	-	%/°C
Common Mode Rejection Ratio	$V = 20V_{p-p}, R_L = 2K\Omega, F = 100\text{Hz}$	CMRR	-	130	-	dB
Input/Output Isolation		I/O	2500	-	-	V_{RMS}
"E" Suffix (optional)			3750			V_{RMS}
Total Harmonic Distortion	$F_0 = 350\text{Hz}, 0\text{dBm}$	THD	-96	-87	-80	dB
Frequency Response	Photoconductive Operation Photovoltaic Operation	BW (-3dB)	-	200	-	kHz
		BW (-3dB)	-	40	-	kHz

¹LOC111 and LOC112 Bins D E F G.

K3 Sorted Bins

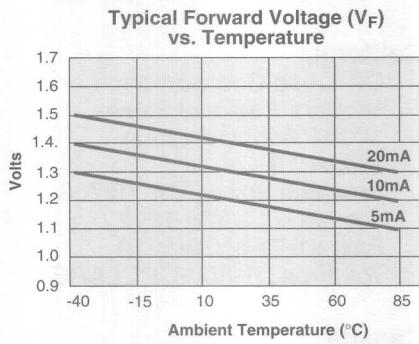
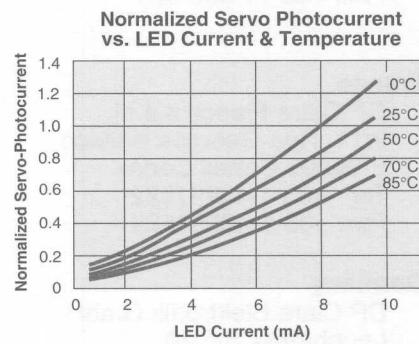
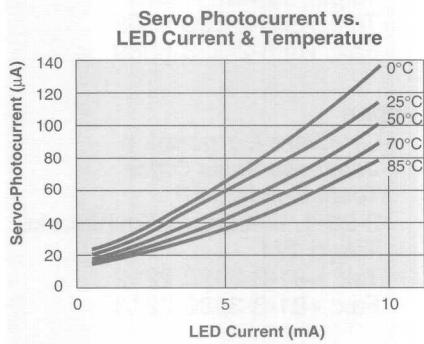
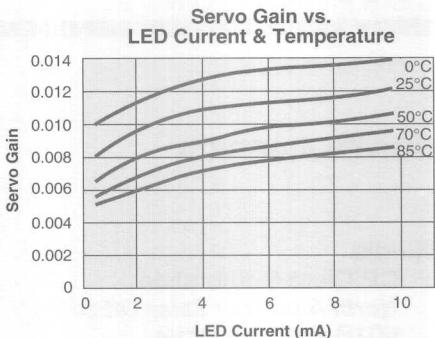
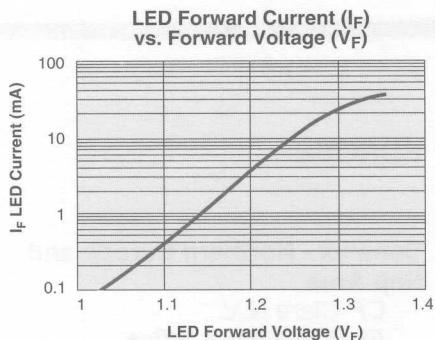
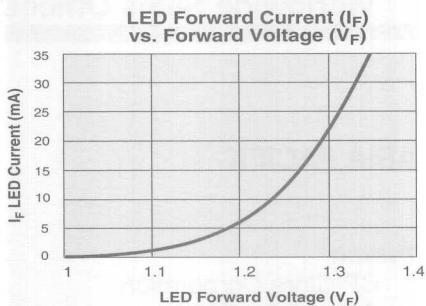
Bin A = 0.550-0.605
Bin B = 0.606-0.667
Bin C = 0.668-0.732
Bin D = 0.733-0.805
Bin E = 0.806-0.886
Bin F = 0.887-0.974
Bin G = 0.975-1.072
Bin H = 1.073-1.179
Bin I = 1.180-1.297
Bin J = 1.298-1.426

- The LOC110/LOC111/LOC112 are shipped in anti-static tubes of 50 pieces. Each tube will contain one K3 sorted bin.
- Bin designation marked on each device (A-J).
- Orders for the LOC110 product will be shipped using bins available at the date of the order. Any bin (A-J) can be shipped.
- For customers requiring selected bins D E F G we offer part number LOC111 or LOC112.

Example:

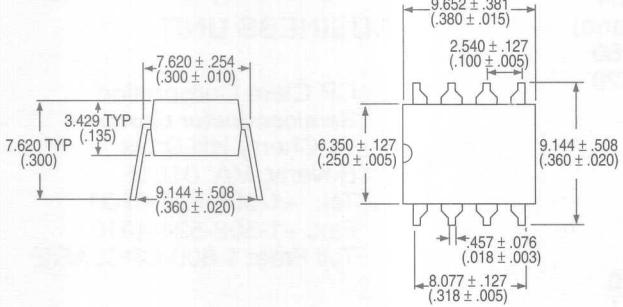


For additional information ask for our LOC Series Application Note No. 1003.
For detailed information on all CP Clare Products ask for our Data Book.

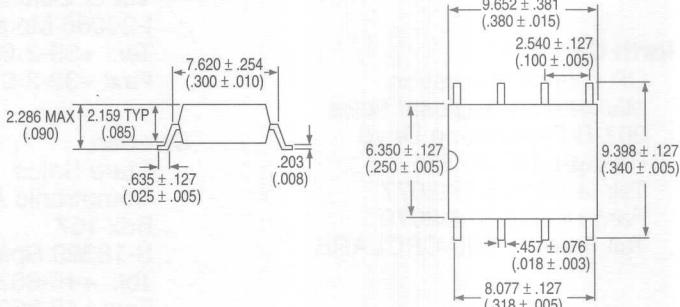


MECHANICAL DIMENSIONS

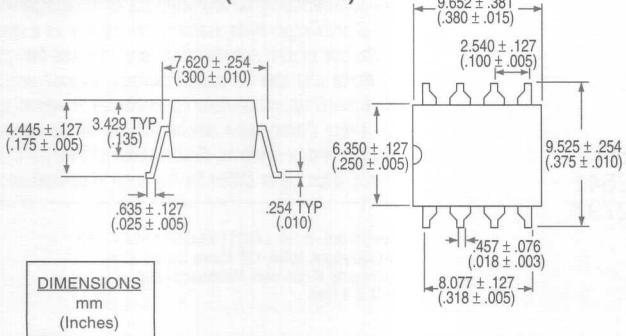
Through Hole 8 Pin (Standard)



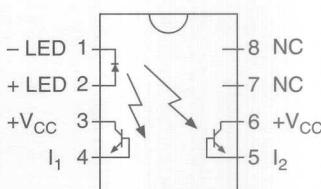
Flatpack Package (“P” Suffix)



Surface Mount 8 Pin ("S" Suffix)



PACKAGE PINOUT



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Specification No. LOC110/LOC111/LOC112
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